ABSTRACT

An A/D conversion array for an image sensor, in which the number of amplifiers and capacitors are decreased compared with the conventional cyclic type, and a function to cancel the noise generated in the pixel section of the image sensor is provided, so that the area and power consumption are decreased.

After an input signal Vin is supplied to C1 and held, a reset level is applied to Vin, whereby the differential signal is amplified by the ratio of C1 and C2 (C1/C2) connected to an inverting amplifier. Then an output from the inverting amplifier is held in C1, and the output of the inverting amplifier is A/D-converted by a comparator so that a control signal is generated by the conversion output, and one of the switches controlled by ϕM1, ϕ01 and ϕP1 is turned ON. The digital signal is converted into an analog signal, and the analog signal is subtracted from the signal held in C1. This signal is amplified and is subjected to A/D conversion again, then the same operation is cyclically repeated. By this, noise cancellation and multi-bit A/D conversion can be performed.